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a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of concentric annular flaps secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers; and

a retaining ring joined to the base assembly;

wherein the carrier head includes five pressurizable chambers.

5. (Amended) A carrier head, comprising:

a housing to be secured to a drive shaft;

a base assembly;

a loading chamber controlling the position of the base assembly relative to the housing;

and

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a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of concentric flexible annular flaps secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers;

wherein at least one of the annular flaps includes a notch positioned and configured to reduce compressions in the main portion caused by downward load transmitted through the annular flap of the flexible membrane.

6. The carrier head of claim 5, wherein the notch is formed at a juncture between the at least one annular flap and the main portion.

7. (Amended) A carrier head, comprising:

a housing to be secured to a drive shaft;

a base assembly;

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a loading chamber controlling the position of the base assembly relative to the housing;

and

a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of concentric annular flaps secured to the

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base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers;

wherein at least one of the annular flaps includes a widened section adjacent a juncture between the at least one annular flap and the main portion.

8. The carrier head of claim 7, wherein the at least one annular flap includes a horizontal portion extending from the base assembly to the widened section.

13. (Amended) A carrier head, comprising:
a base assembly; and
a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of concentric annular portions extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, at least one of the annular portions including a notch positioned and configured to reduce compressions in the main portion caused by downward load transmitted through the annular portion of the flexible membrane.

14. The carrier head of claim 13, wherein the notch is formed at a juncture between the at least one annular portion and the main portion.

15. (Amended) A carrier head, comprising:
a base assembly; and
a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of concentric annular portions extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, at least one of the annular portions including a notch;

wherein the at least one annular portion includes a plurality of notches.

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16. The carrier head of claim 15, wherein a first notch of the plurality of notches is formed at a juncture between the at least one annular portion and the main portion and a second notch of the plurality of notches is formed at about a mid-point of the annular portion.

17. A carrier head, comprising:
a base assembly; and
a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface, an outer annular portion extending from an edge of the main portion and secured to the base assembly, and an inner annular portion extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, the inner annular portion including a notch.

18. A carrier head, comprising:
a base assembly; and
a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface, an outer annular portion extending from an edge of the main portion and secured to the base assembly, and an inner annular portion extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, the inner annular portion including a widened section adjacent a juncture between the inner annular portion and the main portion.

19. The carrier head of claim 18, wherein the inner annular portion includes a horizontal portion extending from the base assembly to the widened section.

20. The carrier head of claim 18, wherein the inner annular portion includes a rim section between the base assembly and the widened section.

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21. The carrier head of claim 20, wherein the widened section includes a sloped face on a side closer to the rim, and a generally vertical face on a side opposite the rim.

22. The carrier head of claim 21, wherein the rim section is connected to a top vertex of the widened section.

23. A carrier head, comprising:
a base assembly; and
a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface, an outer annular portion extending from an edge of the main portion, a first flap connected to a top vertex of the outer annular portion and secured to the base assembly, and a second flap connected to a second vertex of the outer annular portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers.

24. A flexible membrane for use in a chemical mechanical polishing carrier head, comprising:
a generally circular main portion with a lower surface to provide a substrate-mounting surface;
an outer annular portion extending from an edge of the main portion to be secured to a base assembly of the carrier head; and
an inner annular portion extending from the main portion to be secured to the base assembly, the inner annular portion including a notch.

25. A flexible membrane for use in a chemical mechanical polishing carrier head, comprising:
a flexible generally circular main portion with a lower surface to provide a substrate-mounting surface;
an outer annular portion extending from an edge of the main portion to be secured to a base assembly of the carrier head; and

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an inner annular portion extending from the main portion and secured to the base assembly, the inner annular portion including a widened section adjacent a juncture between the inner annular portion and the main portion.

Please add the following new claims:

26. A carrier head, comprising:
a housing to be secured to a drive shaft;
a base assembly;
a loading chamber controlling the position of the base assembly relative to the housing;

and

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a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of flexible concentric annular flaps secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers;

wherein at least one of the annular flaps includes a notch adapted to allow the at least one of the annular flaps to flex when the pressure is unequal in adjacent pressurizeable chambers.

27. The carrier head of claim 26, wherein the notch is formed at a juncture between the at least one annular flap and the main portion.

28. A carrier head, comprising:
a base assembly; and

a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of concentric annular portions extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, at least one of the annular portions including a notch adapted to allow the at least one of the annular portions to flex when the pressure is unequal in adjacent pressurizeable chambers.

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29. The carrier head of claim 28, wherein the notch is formed at a juncture between the at least one annular portion and the main portion.

30. A carrier head, comprising:
a base assembly; and

A12 a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface, an outer annular portion extending from an edge of the main portion and secured to the base assembly, and an inner annular portion extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, the inner annular portion including a notch adapted to allow the inner annular portion to flex when the pressure is unequal in adjacent pressurizeable chambers.

31. A flexible membrane for use in a chemical mechanical polishing carrier head, comprising:

a generally circular main portion with a lower surface to provide a substrate-mounting surface;

an outer annular portion extending from an edge of the main portion to be secured to a base assembly of the carrier head; and

an inner annular portion extending from the main portion to be secured to the base assembly, the inner annular portion including a notch adapted to allow the inner annular portion to flex.

32. A carrier head, comprising:

a base assembly; and

a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface, an outer annular portion extending from an edge of the main portion and secured to the base assembly, and an inner annular portion extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, the inner annular portion

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including a widened section adjacent a juncture between the inner annular portion and the main portion and a section extending generally parallel to the main portion that has a first edge joined to an apex of the widened section and a second edge secured to the base assembly.

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33. A carrier head, comprising:

a housing to be secured to a drive shaft;

a base assembly;

a loading chamber controlling the position of the base assembly relative to the housing;

and

a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface and a plurality of concentric annular flaps secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers;

A12 wherein at least one of the annular flaps includes a widened section adjacent a juncture between the at least one annular flap and the main portion,

and wherein the widened section stiffens the annular flap allowing it to resist bowing when there is unequal pressure in adjacent pressurizable chambers.

34. The carrier head of claim 33, wherein the at least one annular flap includes a horizontal portion extending from the base assembly to the widened section.

35. A carrier head, comprising:

a base assembly; and

a flexible membrane having a generally circular main portion with a lower surface that provides a substrate-mounting surface, an outer annular portion extending from an edge of the main portion and secured to the base assembly, and an inner annular portion extending from the main portion and secured to the base assembly, the volume between the base assembly and the flexible membrane forming a plurality of pressurizable chambers, the inner annular portion including a widened section adjacent a juncture between the inner annular portion and the main portion,

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wherein the widened section stiffens the inner annular portion allowing it to resist bowing when there is unequal pressure in adjacent pressurizable chambers.

36. The carrier head of claim 35, wherein the inner annular portion includes a horizontal portion extending from the base assembly to the widened section.

37. The carrier head of claim 35, wherein the inner annular portion includes a rim section between the base assembly and the widened section.

38. The carrier head of claim 37, wherein the widened section includes a sloped face on a side closer to the rim, and a generally vertical face on a side opposite the rim.

39. The carrier head of claim 38, wherein the rim section is connected to a top vertex of the widened section.

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40. A flexible membrane for use in a chemical mechanical polishing carrier head, comprising:

a generally circular main portion with a lower surface to provide a substrate-mounting surface;

an outer annular portion extending from an edge of the main portion to be secured to a base assembly of the carrier head; and

an inner annular portion extending from the main portion and secured to the base assembly, the inner annular portion including a widened section adjacent a juncture between the inner annular portion and the main portion,

wherein the widened section stiffens the inner annular portion.

In the drawings:

Please accept the amended drawings, in which proposed corrections to Figures 1 and 3 are marked in red.

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